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ABSTRACT

In 1987, a study was conducted to investigate the extent to which demographic, institutional, and assessment factors affected access to college-level courses for underrepresented students (i.e., Blacks, Hispanics, Native Americans, and persons with disabilities). Using stepwise discriminant function analyses and descriptive statistics, the study examined factors which discriminated between students who were eligible for entry into college-level courses and those who were not. The study used pre-existing college assessment, course, and student/institutional demographic data and information collected from interviews with community college administrators, faculty, and staff. The predictor variables analyzed included demographic variables (e.g., age, gender, student goal, and educational history), institutional variables (e.g., size, setting, ethnic distribution, and instructional resource allocation), and reliability, validity, and norms of the assessment/placement tests used. The study examined the separate and collective effects of these predictors on eligibility for placement into transfer/baccalaureate, associate degree-applicable only, or precollegiate basic skills courses. The study sample consisted of 24,952 new and continuing students enrolled at six community colleges in fall 1987. Findings showed that demographic and institutional characteristics related to race/ethnicity affected student access to college. The bulk of the report consists of tables showing the results of the statistical analyses. The report includes 124 references. (WJT)

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An Examination of Demographic, Institutional, and Assessment Factors Affecting Access to Higher Education for Underrepresented Students in the California Community Colleges

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Reconciling equality and excellence has always been a difficult assignment and it will be no easier now. In fact, the challenges to be faced on the campus will be greater than ever before: colleges must continue to expand access to disadvantaged students while making even greater efforts to improve the quality of education they receive.

Hartle, 1985, p. 16

An Examination of Demographic, Institutional, and Assessment Factors Affecting Access to Higher Education for Underrepresented Students in the California Community Colleges

Community colleges have been historically referred to as "open door" institutions of higher education - institutions which promote access and success for all who enter their doors (Commission for the Review of the Master Plan for Higher Education [CRMP], 1987, p. 14). In California's 107 community colleges, open admissions policies mean that anyone eighteen years or older who is capable of benefiting from the college programs can attend (California Education Code, Section 76000, 1981).

For underrepresented students - ethnic minorities, the disabled, and others from protected classes, community colleges often provide the first, and sometimes only, opportunity to enter higher education freely and openly without regard to past achievement, disadvantagement, or failure in the traditional sense. Maintaining open access to community colleges is a fundamental tenet in California postsecondary education. Over 80% of these underrepresented students attend a community college in the hope of realizing their educational aspirations of transfer toward baccalaureate and graduate degrees, employment, or both.

This paper investigates the relationship of demographic, institutional, and assessment factors affecting access to college courses for underrepresented students (Black, Hispanic, Native American, and persons with disabilities) in six California community colleges. Using stepwise discriminant function analyses, and descriptive statistics, this study examines factors which discriminate between students eligible for entry into college level courses compared to those who are not. Interview data yielded other factors which may contribute to access to college courses.

While students are not "admitted" to community colleges in the formal sense, placement testing is done to direct students into various levels of the community college curriculum. Thus, a parallel can be drawn between placement in an open access system and admissions in a closed or selective system.

For the purposes of the present investigation, access was defined as student eligibility for entry into college and non-college level courses which may be explained by a variety of demographic, institutional, and assessment factors. These factors, when combined, may facilitate or restrict entrance into college courses.

PRIOR STUDIES

This paper examines both the substantive and procedural ways in which students are placed into community college courses (Ellett, 1977). While many studies have examined the effect of demographic, institutional, and assessment variables on student performance in

college (Astin, 1971a, 1971b, 1973, 1975, 1985; Bowers, 1970; Bray & Belcher, 1987; Breland, 1979; Dittmar, 1977; Goldman & Hewitt, 1975, 1976; Goldman & Richards, 1974; Goldman & Slaughter, 1976; Halpin, Halpin, & Schaer, 1981; Hand & Prather, 1985; Lach, 1971; Linn & Davis, 1966; Linn & Dunbar, 1982; Munday, 1967; Pfeifer & Sedlacek, 1971; Stanley & Porter, 1967; Temp, 1971; Tracey & Sedlacek, 1984, 1985, 1987), very few studies have investigated the impact of these factors on access to higher education, specifically for students from underrepresented groups (Anastasi, 1982; Cleary, et al., 1975; Lewis & Cox, 1988; Martinez, 1985). Since the early 1970's, empirical studies of the effects of college placement testing on minority students have not addressed the question of access to the educational program (American Association of Collegiate Registrars and Admissions Officers & The College Board, 1980; Hargadon, 1981; Hartnett & Feldmesser, 1980).

This exploratory study was drawn from the decision-theoretic works of Cronbach (1956, 1969a, 1969b, 1970, 1976, 1984, 1980b), Ellett (1977), Linn (1973, 1975, 1976, 1982, 1984, 1986b; Messick, 1975, 1980, 1985), Novick (1981, 1982), E. L. Thorndike (1913, 1914, 1969), and others whose research on the effects of standardized tests and related human behavioral factors on the performance of different ethnic groups and individuals led to the development of this study.

Specifically, this study was founded on Cronbach's decision-theoretic approach, demonstrating the relationship between psychometrics and politics in selection decisions (Cronbach, 1980b). Test validity and reliability procedures and criteria are determined based on researchers' decisions about not only what is proper to measure, but how measurements should be done. These decisions rest upon values which are influenced by varying socio-political attitudes and beliefs (Cronbach, 1976, 1980a, 1980b; Lerner, 1978; Linn, 1982, 1984, 1986b; Messick, 1975, 1980, 1981, 1984, 1989a, 1989b; E. L. Thorndike, 1969).

When decision rules are applied to test development, use, selection, and interpretation, Cronbach states that "the whole selection system is to be justified, not the test alone" (1980b, p. 103). Standards that are value-free do not exist. Other leading researchers, including R. L. Thorndike (1971), Novick (1981, 1982), Darlington (1971), Cole (1973, 1981), Linn (1982, 1984, 1986b), Messick (1975, 1980, 1981, 1984, 1989a, 1989b) and Shepard (1982), have confirmed this approach during the past two decades. Of these, Linn's work has focused on investigating fairness in selection (1973, 1976, 1978, 1982, 1986b, 1989), demonstrating that measurement experts rely on the inherent fairness of the criterion variable, which is, in itself, a values decision. In the testing literature, whether the major demographic predictor variables are mediated by unidentified intervening variables can also affect the measurement outcome (e.g., the performance of college students in courses). Test instruments and testing procedures require thorough investigation, supported by empirical evidence, that tests measure what the public believes that they measure.

This study was also based on the standards for educational tests which describes psychometric and procedural criteria for test selection, use and interpretation (American Education Research Association, American

Psychological Association, & National Council on Measurement in Education, 1985).

While anyone can enroll in a community college, attaining an associate of arts or science degree has become a more rigorous endeavor. State legislators and local academicians have affirmed policies which strengthen course standards and requirements for the associate degree in California's community colleges (Board of Governors [BOG], 1987a, 1987b; CRMP, 1986). These same policy makers have required colleges to implement mandatory assessment and follow up procedures for students entering college (Assembly Bill No. 3 [AB 3], 1986; BOG, 1987c).

The AB 3 legislation and California Community Colleges Board of Governors policies directs the 107 community colleges to use multiple measures, including standardized tests, to place students in college courses. These new assessment regulations are designed to improve student success in courses through more accurate initial placement based on assessment information (e.g., a better match between the entering skill levels of the student and the course taken); to reduce the drop-out rate; and to increase access to courses appropriate to meet the skills needs of the large numbers of underprepared students entering community colleges (Bray, et al., 1985). Entrance and exit tests also provide information about the performance of students, demonstrating that postsecondary institutions are accountable to the students they serve and to the public (Daughdrill, Jr., 1988; Learning Assessment Retention Consortium [LARC], 1986, 1987, 1988a, 1988b, 1988c; Lerner, 1980; Rounds, 1983).

Many advocacy civil rights groups and legislators remain concerned about possible testing bias, the questionable predictive validity of instruments, and the lack of empirical evidence available about the effects of such assessment procedures on minority and disabled community college students (Campbell, 1988, March).

These criticisms stem largely from four major themes which have converged to produce the present testing controversy in higher education. First, the rapid growth of the testing movement in the last century has brought newer, more advanced measurement and testing technologies to the higher education market place. As a result, test developers have become more sophisticated and the public more wary about the purpose of tests and testing. Second, legal decisions regarding discriminatory testing practices continue to affect how testing research is done and create pressure on educators and policy makers to improve assessment and placement practices in postsecondary institutions. The Statewide Matriculation Plan of the California Community Colleges is one such response to this pressure (BOG, 1986; 1989). Third, the practical applications of the findings of measurement experts in addressing not only the adequacy of the tests themselves, but how institutions use them, are both complex and varied. Community colleges need to find ways to validate the tests they use and to eliminate test bias or other human errors which can occur in any testing process which may affect student access to college programs. Finally, comparative investigations show differences in performance of minorities as measured by placement tests. Factors which create such differences must be examined in order to

improve not only the tests, but also college assessment procedures. The reasons for group differences as shown by such tests need to be demystified as much as possible through empirical studies. The results of these comparative investigations have spurred many postsecondary state agencies, including the California Community Colleges Chancellor's Office, to develop and review appropriate assessment, placement, and follow-up policies for students attending these institutions (Banta, 1986; LARC, 1987; Morante, et al., 1983a, 1983b).

Most recently, the Educational Testing Service and the College Board have come under fire from special interest consumer groups (Chronicle of Higher Education, November, 1987; Crouse, 1985; Crouse & Trusheim, 1988; Nairn & Associates, 1980; FairTest Examiner, 1988a, 1988b, 1988c, 1988d, 1989; "Merit scholarship," 1988). These groups cite differences in performance by gender and ethnic groups and state that the tests are biased against women and minorities. Over forty postsecondary institutions in the United States have stopped requiring the SAT or ACT for admissions (Allina, 1987), demonstrating concerns over the predictive validity of these instruments for college students.

Investigations of bias and other reported negative effects of testing (Berk, 1982; Cronbach, 1980b; Frierson, 1986; Glaser & Bond, 1981; Linn, 1982, 1984, 1986b; Martinez, 1985; Novick, 1982) are causing colleges to seek alternatives to standardized tests. As substitutions for multiple-choice standardized tests, alternatives already include holistically scored essays, interviews, and previous grades (Bray & Belcher, 1987; Cronbach, 1980b; Hargadon, 1981; LARC, 1987).

Most of the case law on testing has been based on whether methods of test selection, use, and interpretation by colleges or employers are "fair" and "reasonable" (Beckham, 1985, 1986; Bersoff, 1981; Lerner, 1978). In several landmark cases, Supreme Court justices cautioned against potential civil rights infringements if access is barred (Dobbins v. Electrical Workers Local 212, 1968; Griggs v. Duke Power Co., 1971; Washington v. Davis, 1976; United States v. H. K. Porter Co., 1968). However, court definitions of "reasonableness" and "fairness" varied given the uniqueness of a particular case.

During the past decade, many federal and state Supreme Court decisions have been controversial. While the Texas State Supreme Court found that the National Teachers Examination [NTE] discriminated against prospective Hispanic teachers (United States v. LULAC, 1986), in South Carolina, the NTE was found valid for all examinees (United States v. South Carolina, 1978).

This landmark case has a special relevance to community colleges assessment and placement practices. Upholding the use of the NTE, the United States Supreme Court determined that the test had adequate validity, that cut-off scores were reasonable, and that the instrument had a direct relationship to the criterion it was designed to measure. When assessing students for admission to college or for placement in courses, postsecondary institutions remain increasingly cognizant of these and other testing decisions (Debra P. v. Turlington, 1981; Hobson

v. Hansen, 1969; Larry P. v. Riles, 1980; PASE v. Hannon, 1980; Regents of the University of California v. Bakke, 1978).

Such cases demonstrate that fair criteria are essential to assure equal opportunity and civil rights for all students, and especially for those members of classes which have traditionally born the burden of past discrimination (Blacks, Hispanics, Native Americans, and persons with disabilities).

The results of court decisions on testing will continue to affect educational practice. For community colleges, procedural safeguards related to assessment are necessary to protect the rights of students and staff, to avoid claims of disparate impact, denial of due process, or arbitrary or capricious action on the part of the institution. Case law emphasizes the need for consistent application of uniform guidelines and systematic procedures in assessing individuals for placement in educational programs or employment.

Controversy about bias in testing, prediction, prior misuse of statistical information especially in relation to intra-group differences, the item-disclosure controversy, and institutional use of test cut-off scores is well documented in the testing literature (Berk, 1982; Cleary, 1968; Cleary, et al., 1975; Cole, 1973, 1981; Cronbach, 1969b, 1980a, 1980b; Darlington, 1971; Glaser & Bond, 1981; Lerner, 1980; Linn, 1973, 1975, 1978, 1980, 1982, 1984, 1986b, 1989; Novick, 1981, 1982).

Many comparative studies emphasize the need for careful selection of test instruments, assessment procedures, and evaluation methods (Goldman & Hewitt, 1976; Hennessy & Merrifield, 1976; Linn, 1984; Nettles, Thoeny, & Gosman, 1985, March; Novick, 1982).

Four thematic areas were described which bear upon the present study: the history of college placement testing, the legal aspects of assessment, the content and procedural aspects of assessment, and comparative testing investigations. Findings from the legal reviews concur in large measure with results of experimental studies in suggesting adequate technical, psychometric, and legal standards for equitable assessment of students. Results of these studies support the need for preventative measures and, in fact, specify several methods which can be applied to the development, selection, and use of placement tests in the California Community Colleges.

Of particular importance to this study were factors which may affect equity and access to community college programs, particularly, characteristics of students, the institutions they attend, and the assessment measures and procedures used to determine eligibility for college courses.

METHODOLOGY

Data

The sample for this study consists of 24,952 new and continuing students enrolled at six California community colleges in the Fall, 1987 semester and who took a college placement test during 1987. Demographic characteristics of students in the sample are found in Tables 1-7.

These six community colleges are representative of many others within the statewide system of 107 California community colleges in respect to ethnic composition, setting (urban, suburban and rural), and size. Tables 8-10 present selected institutional variables used in this study.

This study is conducted in two parts: the first using pre-existing college assessment, course, and student/institutional demographic data; and the second, based on data collected from face-to-face interviews with community college administrators, faculty, and staff to gather additional information about student assessment policies and procedures. Specifically this study seeks to identify those factors which affect the placement of students into transfer/baccalaureate, associate degree-applicable-only, or pre-collegiate basic skills courses.

This study investigates the relationships among twenty-eight independent predictors: fourteen demographic variables (age, gender, race/ethnicity, citizenship, disability, financial aid, full or part-time student, educational history, academic level, student goal, prior grade point average, enrollment status, educational disadvantagement, and employment status), eleven institutional variables (size, full-time to part-time student ratio, setting, race/ethnicity ratio of underrepresented to represented students, disabled to able-bodied student ratio, matriculation resource allocation, instructional resource allocation, type of assessment director, test dates, availability of placement testing, and course availability), and three assessment variables (reliability, validity, and norms of the placement tests used). Additional assessment variables, including student assessment policies and procedures, assessment bias, staffing, and colleges' use of cut-off scores, are also examined during the qualitative part of the study.

The dependent variable is access to community college courses defined as student eligibility or type of placement into one or more credit courses in three categories: transfer/baccalaureate level, associate degree-applicable only, or pre-collegiate basic skills level. Elements of the dependent variable include: the type of placement test taken; the student's score; and whether the student met the English or Mathematics placement test cut-off score set by the college to determine eligibility into one of the three categories.

Procedure

Two stepwise discriminant function analyses (one for English and one for Mathematics) and descriptive statistics are used to determine at what

levels students enter and participate in the community college curriculum (transfer/baccalaureate, associate degree-applicable only, or pre-collegiate basic skills level). These three-group discriminant function analyses are used to determine whether students assessed by the six community colleges and determined eligible for placement into college level courses could be differentiated from those who were assessed and determined ineligible.

Of the initial 28 predictor variables, 6 were eliminated due to insufficient data reported by one or more of the community colleges, 3 assessment variables (validity, reliability, and norms) were collapsed into one assessment variable (dummied for the discriminant analysis), denoting whether the test met three basic criteria used to determine the psychometric adequacy of the instrument (yes/no), and 3 additional variables were included in the analyses for which data was available, the assessment variable as previously noted, citizenship, and type of assessment director.

After completed discriminant function analyses in a saturated model, 3 of the remaining 21 variables were dropped (size, assessment director, and enrollment status). Intercorrelations were examined which identified that size overlapped with setting, 43% of the enrollment status data was missing, and the criteria for the assessment director variable were found to be unreliable.

Two discriminant function analyses were completed on eighteen predictor variables: one for the sample of students who took an English placement test and one for those who took a Mathematics placement test. Of the 18 predictors, 11 are demographic factors, seven institutional factors, and one assessment factor. Tables 11-14 present demographic, institutional and assessment factors used in the study.

Additional analyses using frequency distributions, percentages, and cross-tabulations were also completed. Race/ethnicity was analyzed in two ways: by racial/ethnic underrepresented/represented group in the discriminant function, and by specific racial/ethnic group cross-tabulated against the three levels of the criterion variable, type of placement into community college courses.

Data yielded from structured interviews in the second part of the study included characteristics of tests used by the colleges, methods for choosing tests and establishing cut scores, test validation and bias studies done by the colleges, and other factors such as availability of alternative or specialized assessment and placement procedures, treatment of students in the process, written policies on testing, student exemptions from assessment, and qualifications and training of staff. These data are analyzed using descriptive statistical procedures, including frequency distributions and percentages.

FINDINGS

Specifically, this study examined the separate and collective effects of twenty-eight predictors on eligibility for placement into one of three

levels of college courses: transfer/baccalaureate, associate degree-applicable only, or precollegiate basic skills. For 20,794 students who took the English placement test, fourteen factors explain 38% of the total variance in the model and correctly classified 54% of the students into one of the three course levels. For 22,849 students who took the Mathematics placement test, fourteen factors explain nearly 26% of the total variance associated with student eligibility for college courses. For this group, eligibility for placement could be successfully predicted 56% of the time. For both groups, the highest classification percentages occurred for the transfer/baccalaurate level-eligible students - largely the represented group of Caucasians, for whom the predictions appear most accurate as confirmed by several chi-square analyses described below. Tables 15-18 display the intercorrelation matrices and classification results of the discriminant function analyses for students who took the English and Mathematics placement tests, respectively.

Six predictors for the English and Mathematics groups, respectively, emerged to explain the greatest amount of the variance associated with access to courses for underrepresented students. Three of the top predictors in both groups are the same: the ratio of underrepresented to represented students on campus, the race/ethnicity of the students, and the students' academic level. Other predictors for the English group are: the full-time to part-time ratio of students on the campus, citizenship, and the percentage of funds allocated by the colleges to admissions and counseling. For the Mathematics group, ratings of the placement tests, age, and student goal comprise the other three top predictors. Tables 19 and 20 show the top six predictors in each of the discriminant function analyses for the English and Mathematics groups.

Results of these analyses suggest that underrepresented students, expressed either as an institutional or a demographic variable, are associated with eligibility for remedial and associate degree-applicable only courses. Represented students as a predictor (largely Caucasian, U.S. citizens) appear to be associated with eligibility for the transfer/baccalaureate level of community college courses.

Two of the most powerful variables, the institutional predictor (underrepresented/represented student ratio at each college) and the demographic predictor (race/ethnicity by underrepresentedness) appear in both discriminant function analyses.

A crosstabulation of race/ethnicity by eligibility for college courses was also completed as part of this study. Tables 21 and 22 display the results for students in the English and Mathematics groups. The results of these analyses show that the observed frequencies are greater than the expected frequencies (shown in parentheses) for Black, Hispanic, and Native American students in the precollegiate basic skills and associate degree-applicable only levels of eligibility for college courses; for the transfer/baccalaureate course level, the reverse appears true and the representation of Caucasian students appears at higher levels than would have been expected. It is also interesting to note that parallel findings to the underrepresented students occur for the represented group of Asian students. In sum, the proportion of underrepresented

students is greater than would have been expected for the two lower levels of eligibility for college courses.

Results of the qualitative data gathered from face-to-face interviews yielded some additional information. All six community colleges utilize six or more placement tests to determine student skill levels for entry into college courses. Diagnostic as well as placement tests are used at entry and the SAT and ACT tests are routinely used as alternatives to the college placement test. Most of the tests are multiple choice format; however, all use a holistically scored writing essay to evaluate English composition skills. This study found that colleges regularly use predictive and content validation procedures, though the methods vary in sophistication from a research standpoint. All addressed the necessity to minimize assessment bias, but needed additional expert assistance to conduct bias studies. Results also showed that transcript verification of previous courses completed by the student and challenge examinations are the most frequently used alternatives to standardized testing. Also, students are routinely exempted from assessment based on criteria established at each institution (e.g., other qualifying test scores, evidence of degree completion, etc.).

Finally, college procedures for setting and use of cut-off scores for their assessment instruments was also examined and yielded some problematic findings. Table 23 offers a display of the variation in cut-off scores for colleges using test instruments for placement purposes. In several cases, cut-off scores are not based on departmental research findings but rather on data which appear to have no empirical validity (e.g., the "experience of faculty" or the "economic impacts on college enrollments"). An examination of cut-off scores used at these institutions shows a wide variation among the colleges, suggesting that different determinants for what constitutes college level and below are used. Regarding access to college courses for all students, and especially for underrepresented students, variation in cut-off scores appears to have a direct effect on eligibility to enroll.

SUMMARY AND CONCLUSIONS

Findings showed that both the demographic and institutional characteristics related to race/ethnicity affect student access to college. Such factors should be carefully considered by colleges as they implement assessment and placement programs.

The discriminant function analyses conducted in this study showed that both the increasing ethnic diversity of institutions and the racial/ethnic representedness of its students are powerful factors impacting student eligibility for college courses. Analyses of the intercorrelation matrices and chi-square analyses showed that underrepresentedness is generally associated with lower two levels of college courses, and representedness with the transfer/baccalaureate level, suggesting that emphasis should be placed on assisting underrepresented students to become eligible in greater numbers for the transfer/baccalaureate level of community college courses.

This study also found wide disparities in community college uses of assessment tests, methods, and procedures. For example, a wide variation among the six colleges was evident in regard to setting and using cut-off scores. The improper use of tests and procedures may result in some serious inequities and student access may be negatively impacted.

Additionally, disabled and linguistic minority students in this study appeared to be underserved in the regular college assessment programs. However, the reasons for this disparity are unclear and may be due to the existence of special services provided through other on-campus programs. Because these students are not served through "mainstreamed" assessment services, little or no data will be available for future research purposes which may adversely affect the development of more appropriate services for these groups.

This paper corroborates the serious achievement gap between underrepresented and represented students. The net result of this gap is that underrepresented students are typically found eligible for remedial, rather than transfer, level courses.

As a result of these findings, community colleges, and postsecondary institutions in general, may wish to examine current methods, procedures, and instruments used to assess students for eligibility into college courses, paying particular attention to the topics of bias and decision-making processes in choosing instruments, methods, and procedures. In addition, colleges may want to implement new and alternative assessment and instructional treatments (Snow, 1980, 1988) to enhance eligibility for transfer/baccalaureate courses for underrepresented students.

IMPLICATIONS

Findings from this study may begin to build a body of knowledge, now in its infancy, from which future investigations can be done. Research is sorely needed in major statewide systems such as the California Community Colleges which educate nearly 1.4 million students annually. Public higher education institutions which are "open door" (California Education Code, Section 76000, 1981) pride themselves on providing access to all students eighteen years or older. However, research on the degree to which students, particularly underrepresented ethnic minorities and disabled persons, have access to college courses is virtually nonexistent. Specifically, empirical data on the relationship of tests and testing procedures to student eligibility for college courses is needed to answer policy questions related to access to higher education for underrepresented students. Studies identifying those demographic and institutional characteristics which promote access to community colleges, particularly for underrepresented students, are especially critical in light of the raising of academic standards and requirements which had reached an all-time low during the 1960's and 1970's. The present study was designed to explore whether access to college for underrepresented students is being maintained. Results may also provide evidence of need

for inservice training and professional development of staff in using placement tests and in carrying out local assessment policies. Finally, based on the findings in this investigation, colleges may want to examine current assessment practices and conduct further evaluation research to assure access to education for all students.

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Table 1

Frequency Distribution of Gender, Age, and Ethnicity of Students in the Sample by College (N = 24,952)

Variable	College A		College B		College C		College D		College E		College F		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
AGE														
< 18 yrs	217	8.5	485	9.5	762	8.7	250	11.3	186	8.1	395	9.6	2295	9.2
18-24 yrs	1499	59.5	2741	53.9	5417	62.1	1139	51.3	1210	52.9	2642	64.2	14648	58.8
25-34 yrs	491	19.5	1084	21.3	1583	18.1	500	22.5	587	25.6	632	15.4	4877	19.5
35-44 yrs	222	8.8	529	10.5	673	7.7	242	10.8	204	8.9	338	8.2	2208	8.8
45-54 yrs	78	3.1	165	3.2	231	2.7	62	2.8	84	3.7	72	1.7	692	2.8
55 or more	14	0.6	80	1.6	57	0.7	28	1.3	18	0.8	35	0.9	232	0.9
unreported	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
subtotal	2521	100.0	5084	100.0	8723	100.0	2221	100.0	2289	100.0	4114	100.0	24952	100.0
GENDER														
female	1258	49.9	2829	55.6	4650	53.2	1271	57.2	1148	50.2	2186	53.1	13342	53.4
male	1263	50.1	2255	44.4	4073	46.8	950	42.8	1141	49.8	1872	45.5	11554	46.4
unreported	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	56	1.4	56	0.2
subtotal	2521	100.0	5084	100.0	8723	100.0	2221	100.0	2289	100.0	4114	100.0	24952	100.0
RACE/ETHNICITY														
Caucasian	2051	81.4	2978	58.5	4627	53.0	563	25.3	839	36.6	3373	82.0	14431	57.5
Hispanic	137	5.4	735	14.4	2269	26.0	494	22.2	473	20.7	227	5.5	4335	17.5
*Asian	89	3.5	744	14.8	1007	11.6	678	30.6	410	17.9	170	4.1	3098	12.7
Black	33	1.3	317	6.2	627	7.2	115	5.2	145	6.3	89	2.2	1326	5.3
Native Amer.	57	2.3	108	2.1	94	1.1	54	2.4	77	3.4	41	1.0	431	1.7
other	65	2.6	0	0.0	0	0.0	0	0.0	0	0.0	52	1.3	117	0.5
unreported	89	3.5	202	4.0	99	1.1	317	14.3	345	15.1	162	3.9	1214	4.8
subtotal	2521	100.0	5084	100.0	8723	100.0	2221	100.0	2289	100.0	4114	100.0	24952	100.0

* Asian includes Pacific Islanders and Filipinos.

DESCRIPTIVE DATA ON CAUCASIAN AND ASIAN
(REPRESENTED) COMMUNITY COLLEGE STUDENTS

Table 2

Frequency and Percentage Distribution
by Age and Gender for Caucasian Students
in the Sample
(N = 14,431)

	GENDER					
	Male		Female		Unreported	
AGE	f	%	f	%	f	%
< 18 yrs	532	8.4	770	9.6	6	15.8
18-24 yrs	4184	65.8	4151	51.8	25	65.8
25-34 yrs	1107	17.4	1658	20.6	2	5.3
35-44 yrs	364	5.7	1010	12.6	4	10.5
45-54 yrs	116	1.8	349	4.3	0	0.0
55 or more	60	0.9	92	1.1	0	0.0
unreported	0	0.0	0	0.0	1	2.6
total	6363	100.0	8030	100.0	38	100.0

Table 3

Frequency and Percentage Distribution
by Age and Gender for Asian Students
in the Sample
(N = 3,098)

	GENDER					
	Male		Female		Unreported	
AGE	f	%	f	%	f	%
< 18 yrs	143	8.5	114	8.1	0	0.0
18-24 yrs	1086	64.3	849	60.4	3	100.0
25-34 yrs	305	18.0	282	20.1	0	0.0
35-44 yrs	113	6.7	119	8.5	0	0.0
45-54 yrs	24	1.4	30	2.1	0	0.0
55 or more	19	1.1	11	0.8	0	0.0
unreported	0	0.0	0	0.0	0	0.0
total	1690	100.0	1405	100.0	3	100.0

DESCRIPTIVE DATA ON BLACK, HISPANIC, NATIVE AMERICAN
(UNDERREPRESENTED) COMMUNITY COLLEGE STUDENTS

Table 4

Frequency and Percentage Distribution
by Age and Gender for Hispanic Students
in the Sample
(N = 4,335)

	GENDER					
	Male		Female		Unreported	
AGE	f	%	f	%	f	%
< 18 yrs	184	9.1	229	9.9	0	0.0
18-24 yrs	1350	66.6	1326	57.5	3	100.0
25-34 yrs	369	18.2	450	19.5	0	0.0
35-44 yrs	100	4.9	233	10.1	0	0.0
45-54 yrs	18	0.9	55	2.4	0	0.0
55 or more	6	0.3	12	0.6	0	0.0
unreported	0	0.0	0	0.0	0	0.0
total	2027	100.0	2305	100.0	3	100.0

Table 5

Frequency and Percentage Distribution
by Age and Gender for Black Students
in the Sample
(N = 1,326)

	GENDER					
	Male		Female		Unreported	
AGE	f	%	f	%	f	%
< 18 yrs	53	8.6	73	10.3	0	0.0
18-24 yrs	395	63.9	361	51.0	0	0.0
25-34 yrs	117	18.9	185	26.1	0	0.0
35-44 yrs	41	6.6	61	8.6	0	0.0
45-54 yrs	6	1.0	21	3.0	0	0.0
55 or more	6	1.0	7	1.0	0	0.0
unreported	0	0.0	0	0.0	0	0.0
total	618	100.0	708	100.0	0	0.0

Table 6

Frequency and Percentage Distribution by Age and Gender for Native American Students in the Sample (N = 431)

	GENDER					
	Male		Female		Unreported	
AGE	f	%	f	%	f	%
< 18 yrs	10	5.3	18	7.4	0	0.0
18-24 yrs	112	59.9	125	51.2	0	0.0
25-34 yrs	49	26.2	47	19.3	0	0.0
35-44 yrs	12	6.4	39	16.0	0	0.0
45-54 yrs	2	1.1	11	4.5	0	0.0
55 or more	2	1.1	4	1.6	0	0.0
unreported	0	0.0	0	0.0	0	0.0
total	187	100.0	244	100.0	0	100.0

Table 7

Frequency and Percentage Distribution by Age, Gender and Ethnicity for Disabled (Underrepresented) and Able-Bodied (Represented) Students in the Sample
(N = 24,952)

	Disabled		Able-bodied		TOTAL	
AGE	f	%	f	%	f	%
< 18 yrs	13	4.5	2282	9.2	2295	9.2
18-24 yrs	132	45.5	14516	58.9	14648	58.7
25-34 yrs	69	23.8	4808	19.5	4877	19.6
35-44 yrs	43	14.8	2165	8.8	2208	8.8
45-54 yrs	19	6.6	673	2.7	692	2.8
55 or more	14	4.8	218	0.9	232	0.9
unreported	0	0.0	0	0.0	0	0.0
total	290	100.0	24662	100.0	24952	100.0

	Disabled		Able-bodied		TOTAL	
GENDER	f	%	f	%	f	%
female	161	55.5	13181	53.4	13342	53.5
male	129	44.6	11425	46.3	11554	46.3
unreported	0	0.0	56	0.3	56	0.2
total	290	100.0	24662	100.0	24952	100.0

	Disabled		Able-bodied		TOTAL	
RACE/ETHNICITY	f	%	f	%	f	%
Caucasian	189	65.2	14242	57.7	14431	57.8
Hispanic	47	16.2	4288	17.4	4335	17.4
*Asian	14	4.8	3084	12.5	3098	12.4
Black	23	7.9	1303	5.3	1326	5.3
Native Amer.	7	2.4	424	1.7	431	1.7
other	0	0.0	117	0.5	117	0.5
unreported	10	3.5	1204	4.9	1214	4.9
total	290	100.0	24662	100.0	24952	100.0

* Asian includes Pacific Islanders and Filipinos.

Table 8

Size and Setting of Sample Colleges
(N = 6)

	Size	Setting
College A	< 10,000	Rural
College B	10,000-20,000	Suburban
College C	> 20,000	Suburban
College D	< 10,000	Suburban
College E	10,000-20,000	Urban
College F	> 20,000	Suburban

< 10,000 = small
10,000-20,000 = medium
> 20,000 = large

Table 9

Total College Enrollment by Ethnicity for Represented and Underrepresented Students
(N = 6)

	RACE/ETHNICITY														Total College Enrollment	
	Represented		Underrepresented													
	Caucasian		*Asian		Black		Hispanic		AmIn/Al		Other		Unreported			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
College A	7189	74.9	312	3.3	90	.9	453	4.7	272	2.8	432	4.5	856	8.9	9604	100.0
College B	9499	61.2	2158	13.9	727	4.8	2038	13.1	266	1.7	828	5.3	0	0.0	15516	100.0
College C	14031	50.4	3344	12.0	1767	6.3	6190	22.2	246	0.9	0	0.0	2276	8.2	27854	100.0
College D	2124	29.6	2131	29.7	418	5.8	1443	20.1	158	2.2	0	0.0	900	12.6	7174	100.0
College E	4340	42.1	1644	15.9	575	5.6	1760	17.1	278	2.7	0	0.0	1712	16.6	10309	100.0
College F	19471	79.0	706	2.9	376	1.5	1216	4.9	242	1.0	300	1.2	2349	9.5	24660	100.0

* Asian includes Pacific Islanders and Filipinos.

Table 10

Total College Enrollment by
Represented and Underrepresented Students
(N = 6)

	RACE/ETHNICITY									
	*Represented		**Underrepresented		Other		Unreported		Total College Enrollment	
	f	%	f	%	f	%	f	%	f	%
College A	7501	78.1	815	8.5	432	4.5	856	8.5	9604	100.0
College B	11657	75.1	3031	19.6	828	5.3	0	0.0	15516	100.0
College C	17375	62.4	8203	29.4	0	0.0	2276	8.2	27854	100.0
College D	4255	59.3	2019	28.1	0	0.0	900	12.6	7174	100.0
College E	5984	58.0	2613	25.4	0	0.0	1712	16.6	10309	100.0
College F	20177	81.9	1834	7.4	300	1.2	2349	9.5	24660	100.0

* Represented includes Caucasian, Asian, Pacific Islander, and Filipino.

** Underrepresented includes Black, Hispanic, and Native American.

Table 11

Eleven Demographic Factors
(N = 24,952)

Variable	Sample	
	f	%
AGE		
less than 18 yrs	2295	9.2
18-24 yrs	14648	58.8
25-34 yrs	4877	19.5
35-44 yrs	2208	8.8
45-54 yrs	692	2.8
55 or more	232	0.9
unreported	0	0.0
GENDER		
female	13342	53.4
male	11554	46.4
unreported	56	00.2
RACE/ETHNICITY		
Caucasian	14431	57.5
Hispanic	4335	17.5
*Asian	3098	12.7
Black	1326	5.3
Native American	431	1.7
other	119	0.5
unreported	1214	4.8
Race/Ethnicity by Representedness		
**represented	17529	70.3
***underrepresented	6092	24.4
other	119	0.5
unreported	1214	4.8
CITIZENSHIP STATUS		
U.S. citizen	22619	90.6
immigrant/refugee	1544	6.2
other/student visa	493	2.0
unreported	296	1.2
DISABILITY		
disabled	290	1.2
able-bodied	24662	98.8
FINANCIAL AID		
applied and received	1876	7.5
applied and did not receive	786	3.2
did not apply nor receive	22290	89.3

Table 11 (continued)

Eleven Demographic Factors
(N = 24,952)

Variable	Sample	
	f	%
TYPE OF STUDENT		
part-time/credit courses taken	14205	56.9
full-time/credit courses taken	7853	31.5
no credit courses taken	612	2.5
unreported	2282	9.1
EDUCATIONAL HISTORY		
high school graduate (or equivalent)	15081	60.7
less than high school	1016	4.1
college degree (includes high school graduates)	380	1.6
unreported	8475	33.6
ACADEMIC LEVEL		
freshman	16846	67.5
sophomore	2029	8.1
AA degree or higher	930	3.7
BA degree or higher	63	0.3
unreported	5084	20.4
STUDENT GOAL		
AA/AS transfer	7961	31.9
transfer without degree	3578	14.3
AA/AS gen. ed & vocational	3455	13.8
vocational certificate	947	3.8
job skills	1187	4.8
unreported	7824	31.4

Table 11 (continued)

Eleven Demographic Factors
(N = 24,952)

Variable	Sample	
	f	%
GRADE POINT AVERAGE PRIOR TO FALL, 1987		
0-1.0	1210	4.9
1.1-2.0	2252	9.0
2.1-3.0	4947	19.8
3.1-4.0	3010	12.1
unreported	13533	54.2

* Asian includes Pacific Islanders & Filipinos.
** Represented includes Asian, Caucasian, Pacific Islander, & Filipino.
*** Underrepresented includes Black, Hispanic, & Native American.

Note: Due to missing data, Educational Disadvantagement (EOPS), Primary Language, Employment Status, and Enrollment Status variables were omitted from the analyses. Citizenship was included in the analyses.

Table 12

Seven Institutional Factors
(N = 24,952)

Variable	Sample by College											
	A		B		C		D		E		F	
	f	%	f	%	f	%	f	%	f	%	f	%
**SIZE												
full-time	2846	30	4501	29	5602	20	1788	25	2054	20	5068	21
part-time	5784	60	10542	68	14583	52	5386	75	8255	80	19592	79
noncredit	974	10	473	3	7669	28	0	0	0	0	0	0
total	9604	100	15516	100	27854	100	7174	100	10309	100	24660	100
RATIO OF FULL-TIME TO PART-TIME STUDENTS IN THE SAMPLE	.492		.427		.384		.332		.249		.259	
SETTING												
urban(1)									1			
suburban(2)			2		2		2				2	
rural(3)	3											
RACE/ETHNICITY												
*underrep./rep. ratio	.109		.260		.472		.475		.437		.091	
DISABILITY												
disabled/ able-bodied ratio	.072		.031		.016		.018		.018		.014	
MATRICULATION RESOURCE ALLOCATION												
% of total spent for counseling, guidance, admissions, & records	.058		.063		.058		.087		.087		.061	
INSTRUCTIONAL RESOURCE ALLOCATION												
% of total spent for instruction	.501		.543		.572		.524		.523		.550	

* Ratio of Black, Hispanic, and Native American to Caucasian and Asian students in the sample.

** Size and type of assessment director were omitted from the discriminant function analyses; however size was used to compute the full-time/part-time students in the sample.

Table 13

Placement Test Ratings used in the Discriminant Function Analyses

Test	Met Criteria	Partially Met Criteria
Comparative Guidance & Placement Test [CGP]	x	
ASSET	x	
Scholastic Aptitude Test [SAT]	x	
American College Test	x	
UC/CSU Mathematics Diagnostic Testing Project [MDTP]		x
Nelson-Denny Reading Test	x	
Gates-MacGinitie Reading Test		x
Stanford Diagnostic Reading Test [SDRT]	x	
Stanford Test of Academic Skills [TASK]		x
Diagnostic Reading Test [DRT]		x
Descriptive Tests of Mathematics Skills [DTMS]	x	
Cooperative Mathematics Tests: Algebra I & II [COOP]		x

* Test was rated as "met criteria" or "partially met criteria" based on information reported in Table 14 and validity, reliability, and norms data gathered as part of this study.

Table 14

Placement Test Ratings
for Reported Reliability, Validity, and Norms
of Placement Tests used in the Discriminant
Function Analyses

Test	Reported Reliability	Reported Validity	Adult/College Norms Used	*Met Criteria
CGP	yes	yes	yes	yes
ASSET	yes	yes	yes	yes
SAT	yes	yes	yes	yes
ACT	yes	yes	yes	yes
MDTP	no	yes	yes	no
Nelson-Denny	yes	yes	yes	yes
Gates-MacGinitie	yes	yes	no	no
SDRT	yes	yes	yes	yes
TASK	yes	no	yes	no
DRT	yes	no	yes	no
DTMS	yes	yes	yes	yes
COOP	yes	no	no	no

* Test was deemed to have met criteria if predictive validity coefficients were reported, using test scores correlated with college GPA as the criterion variable, if adult/college norms were used in the standardization of the instrument, and if KR-20 reliability coefficients were reported for each subtest of the instrument.

Table 15

Intercorrelation Matrix for the Eighteen Predictor Variables with Eligibility for Placement into College Courses for Students who took the English Placement Test (N = 20,794)

Variable	Eligibility for Placement into: Transfer/Baccalaureate Courses	Associate Degree-Applicable Only Courses	Precollegiate Basic Skills Courses
AGE			
<18-24 yrs	-.062******	.057******	.005
25-44 yrs	.054******	-.045******	.007
45-55 or more	.024*****	-.027******	.004
GENDER			
female	-.021****	-.002	-.022***
RACE/ETHNICITY BY REPRESENTEDNESS			
underrepresented	-.211******	.084******	.149******
CITIZENSHIP			
U.S. citizen	.096******	-.012	-.098******
immigrant/refugee	-.096******	.017**	.092******
DISABILITY			
disabled	-.033******	-.010	.050******
FINANCIAL AID	-.011	-.014*	.030******
TYPE OF STUDENT			
part-time credit	-.069******	-.027******	.113******
full-time credit	.071******	.023****	-.111******
EDUCATIONAL HISTORY			
high school graduate	-.310******	.126******	.215******
< high school	-.076******	.006	.083******
college degree	-.004	.013	-.011
ACADEMIC LEVEL			
freshman	-.266******	.067******	.233******
sophomore	-.007	.012	-.006
AA degree or higher	.017**	-.009	-.009
BA degree or higher	-.002	.002	-.000

Table 15 (continued)

Intercorrelation Matrix for the Eighteen Predictor Variables with Eligibility for Placement into College Courses for Students who took the English Placement Test (N = 20,794)

	Eligibility for Placement into:		
Variable	Transfer/Baccalaureate Courses	Associate Degree-Applicable Only Courses	Precollegiate Basic Skills Courses
STUDENT GOAL			
transfer	-.124******	.035******	.104******
AA/AS degree	-.093******	.027******	.078******
voc.cert./job skills	-.075******	.019**	.065******
PRIOR GPA			
0.0-2.0	-.121******	.050******	.082******
2.1-4.0	-.015*	.050******	-.042******
FULL-TIME/PART-TIME RATIO	.185******	.055******	-.282******
SETTING			
urban	-.092******	-.017*	.128******
suburban	-.082******	.080******	.001
rural	.193******	-.088******	-.122******
UNDERREPRESENTED/ REPRESENTED RATIO	-.373******	.261******	.128******
DISABLED/ABLE-BODIED RATIO	.287******	-.110******	-.207******
MATRICULATION RESOURCE ALLOCATION	-.089******	-.065******	.182******
INSTRUCTIONAL RESOURCE ALLOCATION	-.232******	.196******	.039******
PLACEMENT TEST MET CRITERIA	-.125******	.094******	.035******

*p ≤ .05 ***p ≤ .0025 *****p ≤ .0005
**p ≤ .01 ****p ≤ .001 ******p ≤ .0001

Note: Statistical significance of these simple Pearson r correlations should be cautiously interpreted.

Table 16

Classification Results of the
Discriminant Function Analysis for
Students who took the English Placement Test
(N = 20,794)

Actual Group	Number of Cases	Predicted Group Membership: Qualified for Transfer/Baccalaureate Courses	Qualified for Associate Degree-Applicable Only Courses	Qualified for Precollegiate Basic Skills Courses
Qualified for Transfer/ Baccalaureate Courses	7866	5230 66.5%	1660 21.1%	976 12.4%
Qualified for Associate Degree-Applicable Only Courses	8393	2298 27.4%	4316 51.4%	1779 21.2%
Qualified for Precollegiate Basic Skills Courses	4535	1012 22.3%	1477 32.67%	2046 45.1%

Percent of Groups Cases Correctly Classified: 54.3 %

Table 17

Intercorrelation Matrix for the Eighteen Predictor Variables with Eligibility for Placement into College Courses for Students who took the Mathematics Placement Test (N = 22,849)

Variable	Eligibility for Placement into: Transfer/Baccalaureate Courses	Associate Degree-Applicable Only Courses	Precollegiate Basic Skills Courses
AGE			
<18-24 yrs	.087******	.036******	-.091******
25-44 yrs	-.074******	-.030******	.077******
45-55 or more	.039******	-.018**	.042******
GENDER			
female	-.066******	-.046******	.089******
RACE/ETHNICITY BY REPRESENTEDNESS			
underrepresented	-.112******	-.090******	.162******
CITIZENSHIP			
U.S. citizen	-.002	-.000	.001
immigrant/refugee	-.012	.005	.012
DISABILITY			
disabled	-.020***	-.021***	.034******
FINANCIAL AID	-.028******	-.022****	.040******
TYPE OF STUDENT			
part-time credit	-.041******	-.063******	.090******
full-time credit	.063******	.062******	-.103******
EDUCATIONAL HISTORY			
high school graduate	-.060******	-.030******	.068******
< high school	-.020*****	-.022****	.035******
college degree	.016*	.014*	-.025*****
ACADEMIC LEVEL			
freshman	-.072******	-.141******	.190******
sophomore	.050******	.009	-.040******
AA degree or higher	.040******	.016*	-.042******
BA degree or higher	-.002	.002	-.001

Table 17 (continued)

Intercorrelation Matrix for the Eighteen Predictor Variables with Eligibility for Placement into College Courses for Students who took the Mathematics Placement Test (N = 22,849)

Variable	Eligibility for Placement into: Transfer/Baccalaureate Courses	Associate Degree-Applicable Only Courses	Precollegiate Basic Skills Courses
STUDENT GOAL			
transfer	.032******	-.023*****	.004
AA/AS degree	-.057******	-.044******	.081******
voc.cert./job skills	-.056******	-.069******	.106******
PRIOR GPA			
0.0-2.0	-.010	-.067******	.076******
2.1-4.0	.068******	.023****	-.066******
FULL-TIME/PART-TIME RATIO	-.025*****	.044******	-.030******
SETTING			
urban	-.099******	-.028******	.091******
suburban	.004	.108******	-.113******
rural	.094******	-.116******	.060******
UNDERREPRESENTED/ REPRESENTED RATIO	-.295******	.048******	.135******
DISABLED/ABLE-BODIED RATIO	.088******	-.058******	.005
MATRICULATION RESOURCE ALLOCATION	-.115******	-.016*	.088******
INSTRUCTIONAL RESOURCE ALLOCATION	-.058******	.070******	-.036******
PLACEMENT TEST MET CRITERIA	-.207******	.075******	.052******

*p ≤ .05 ***p ≤ .0025 *****p ≤ .0005
**p ≤ .01 ****p ≤ .001 ******p ≤ .0001

Note: Statistical significance of these simple Pearson r correlations should be cautiously interpreted.

Table 18

Classification Results of the
Discriminant Function Analysis for Students
who took the Mathematics Placement Test
(N = 22,849)

Actual Group	Number of Cases	Predicted Group Membership: Qualified for Transfer/Baccalaureate Courses	Qualified for Associate Degree-Applicable Only Courses	Qualified for Precollegiate Basic Skills Courses
Qualified for Transfer/ Baccalaureate Courses	2354	1685 71.6%	509 21.6%	160 6.8%
Qualified for Associate Degree-Applicable Only Courses	11584	3342 28.9%	4473 38.6%	3769 32.5%
Qualified for Precollegiate Basic Skills Courses	8911	1310 14.7%	2533 28.4%	5068 56.9%

Percent of Grouped Cases Correctly Classified: 55.7 %

Table 19

Independent Variables in the Discriminant Function Analysis in order of their Effectiveness for the English Placement Test Sample

Variable	df	R^2	R^2 Change	Wilks' Lambda	F
underrepresented/represented ratio	2,20791	.1398	.1398	.86021	1689.34*
full-time/part-time ratio	2,20790	.0783	.2181	.79282	833.62*
academic level (freshman, 0-30 units taken)	2,20789	.0345	.2526	.76546	371.51*
race/ethnicity by underrepresentedness	2,20788	.0250	.2776	.74631	266.60*
citizenship (immigrant/ refugee	2,20787	.0208	.2984	.73080	220.61*
matriculation resource allocation	2,20786	.0137	.3121	.72081	144.07*

* $p \leq .0001$

Table 20

Independent Variables in the Discriminant Function Analysis in order of their Effectiveness for the Mathematics Placement Test Sample

Variable	df	R^2	R^2 Change	Wilks' Lambda	F
underrepresented/represented ratio	2,22846	.0902	.0902	.90976	1133.11*
academic level (freshman, 0-30 units taken)	2,22845	.0283	.1185	.88403	332.45*
placement test rating (met criteria)	2,22844	.0278	.1463	.85946	326.51*
race/ethnicity by representedness	2,22843	.0199	.1662	.84239	231.45*
age (16-24 yrs)	2,22842	.0169	.1831	.82813	196.62*
student goal (transfer)	2,22841	.0124	.1955	.81784	143.77*

* $p \leq .0001$

Table 21

Chi Square Crosstabulation of Observed and Expected Frequencies for Race/Ethnicity by Level of Eligibility for College Courses for Students who took an English Placement Test (N = 19,733)

	Eligibility for			
	Transfer/ Baccalaureate Level (3)	Associate Degree-Applicable Only Level (2)	Precollegiate Basic Skills Level (1)	Total
Caucasian	6063	4705	1728	12496
	(4755)	(5090)	(2651)	63.3%
Asian	383	837	756	1976
	(752)	(805)	(419)	10.0%
Hispanic	727	1820	1196	3743
	(1424)	(1524)	(794)	19.0%
Black	205	516	405	1126
	(429)	(459)	(239)	5.7%
Native American	131	160	101	392
	(149)	(160)	(83)	2.0%
Total	7509	8038	4186	19733
	38.1%	40.7%	21.2%	100.0%

Note: The calculated chi square and p values for this crosstabulation were highly significant (x^2 = 2010.5; df = 8; $p \leq .0001$). Given the significance of the calculated value for chi square, the coefficient of association, Cramer's V was calculated since the contingency table was assymetrical. For Table 21, V = .2257 as a second test of correlation for nominal data.

Table 22

Chi Square Crosstabulation of Observed and Expected Frequencies for Race/Ethnicity by Level of Eligibility for College Courses for Students who took the Mathematics Placement Test (N = 21,728)

	Eligibility for			
	Transfer/ Baccalaureate Level (3)	Associate Degree-Applicable Only Level (2)	Precollegiate Basic Skills Level (1)	Total
Caucasian	1744	6969	4272	12985
	(1355)	(6620)	(5010)	59.8%
Asian	266	1618	1068	2952
	(308)	(1504)	(1139)	13.6%
Hispanic	171	1826	2140	4137
	(432)	(2109)	(1596)	19.0%
Black	47	478	731	1256
	(131)	(640)	(484)	5.8%
Native American	39	186	173	398
	(42)	(203)	(154)	1.8%
Total	2267	11077	8384	21728
	10.4%	51.0%	38.6%	100.0%

Note: The calculated chi square and p values for this crosstabulation were again highly significant (x^2 = 862.6; df = 8; $p \leq .0001$). The same coefficient of association, Cramer's V, was calculated, given the significance of the calculated value for chi square and the assymetry of the contingency table. For Table 22, V = .1409 as a second test of correlation for nominal data.

Table 23

Minimum Cut-Off Scores by College for Colleges using the Same Placement Test (N = 6)

Placement Test by Level	College A	B	C	D	E	F
ELIGIBLITY INTO TRANSFER/BACCALAUREATE LEVEL COURSES						
SAT-Verbal	510	425	380	N/A	N/A	420
ACT-English	23	18	18	N/A	N/A	20
SAT-Mathematics	530	468	N/A	N/A	N/A	N/A
ACT-Mathematics	23	17	N/A	N/A	N/A	N/A
MDTP-Int. Alg.	N/A	N/A	21-50	27-45	27-45	N/A
MDTP-Precalc.	N/A	N/A	N/A	25-40	25-40	N/A
CGP-Mathematics	N/A	50-60	N/A	N/A	N/A	N/A
ELIGIBILITY INTO ASSOCIATE DEGREE-APPLICABLE ONLY LEVEL COURSES						
SAT-Verbal	N/A	N/A	300-379	N/A	N/A	360-419
ACT-English	N/A	N/A	12-17	N/A	N/A	17-19
MDTP-Alg.Read.	N/A	N/A	25-50	25-40	25-40	N/A
CGP-Mathematics	41-60	29-50	N/A	N/A	N/A	N/A

Table 23 (continued)

Minimum Cut-Off Scores by College for Colleges using the Same Placement Test (N = 6)

Placement Test by Level	College A	B	C	D	E	F
ELIGIBILITY INTO PRECOLLEGIATE BASIC SKILLS LEVEL COURSES						
SAT-Verbal	N/A	N/A	200-299	N/A	N/A	311-359
ACT-English	N/A	N/A	N/A	N/A	N/A	13-16
ACT-Mathematics	N/A	17	N/A	N/A	N/A	N/A
MDTP-Alg.Read.	N/A	N/A	0-24	N/A	N/A	N/A
CGP-Mathematics	0-40	0-28	N/A	N/A	N/A	N/A

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